

PROF. LEIDY exhibited a fossil which had been submitted to his examination by Prof. Hayden, who obtained it on the Moreau River, a tributary of the Upper Missouri, and was probably derived from the cretaceous formation. The specimen consists of the body of a vertebra of a saurian, devoid of the neural arch, which was separated at the suture. It bears a resemblance to the corresponding part of *Nothosaurus*, a saurian of the triassic deposits of Europe. The body is cylindroid, moderately narrowed towards the middle, and has the articular ends slightly concave. The sutural connection of the neural arch, including transverse processes, extends some distance down the sides. The measurements of the specimen are as follow: Length of body inferiorly, $11\frac{1}{2}$ lines; superiorly, 1 inch; depth in front, 11 lines; width, 10 lines.

The specimen probably indicates a marine saurian allied to *Nothosaurus*, and from its resemblance, the animal to which it belonged may be named *Nothosaurops occidentalis*.

July 26th.

The President, DR. RUSCHENBERGER, in the Chair.

Ten members present.

On favorable report of the Committees, the following papers were ordered to be printed:

Descriptions of GRASSHOPPERS, from Colorado.

BY PROF. CYRUS THOMAS.

ANABRUS, Hald.

The characters of this genus were not fully given by Prof. Haldeman when he established it, and those subsequently added by Girard are scarcely sufficient to distinguish it from other closely allied genera. Having both sexes of three species, I give the following as the principle characters that distinguish it.

Gen. Char. Head large, smooth, advanced in front between the antennæ. Pronotum selliform, extending over the base of the abdomen; rounded and smooth; anterior portion of the sides reaching below the eyes; posterior margin and angles rounded. Prosternum bidentate; posterior angles of the meso-sternum elevated and acute. Elytra very short, having the form of scales in the males; covered by the pronotum in the females. Antennæ longer than the body, sometimes extending beyond the ovipositor. Eyes ovate. Labrum round. Maxillary palpi twice the length of the labial; three outer joints nearly equal; terminal enlarged at the tip. Abdomen stout, moderate length; the sub-anal plate of the male large, slightly notched at the tip, furnished laterally with filiform appendages which appear to be articulated at the base; the cerci (or substituted appendages) sub-cylindrical, enlarged and generally bifurcate at the extremity. Ovipositor long, bent beyond the middle. Cerci, in the female, small, generally hairy. Legs slender; posterior pair very long, femora enlarged next the body, but slender and straight beyond the middle, as long as the body (omitting the head); posterior tibiæ long as the femora, slender; all the tibiæ provided with four rows of spines, the anterior rows often scattered and apparently irregular. A stout denticuloid process above the anterior coxa. The tarsi broad, soles concave; third articulation cordate.

This genus differs so slightly, in description, from *Thyreonotus*, Serv., that there is scarcely a necessity for its retention. But an examination of the

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species is necessary to decide this point. *A. purpurascens*, Uhler, must be excluded from this genus, as the prosternum is not spined; it may belong to *Pterolepis*, Rambur, but I have seen no species of this genus, and therefore cannot speak positively.

A. STEVENSONII, n. sp.

Female. Purple, mottled with yellow; form and coloring somewhat similar to *A. purpurascens*, Uhler, but smaller and slenderer in all its parts. Face white, the transverse suture below the front fuscous; tips of the mandibles piceous; palpi pale, the penultimate joints of the maxillary palpi striped with purple above; antennæ long and slender, reaching nearly to the extremity of the ovipositor, dusky; cranium cinereous, with the vertex, and a line extending back from each eye, dull white. Pronotum short, not carinated, a slight transverse incision near the front; the two oblique dorsal impressions very narrow and dark; surface smooth, lurid; a large black spot occupying the central portions of the sides behind the transverse incision; lateral margins broadly and anterior margins narrowly bordered with pale yellow; posterior angles tipped with piceous-black. Tegmina hid beneath the pronotum. Abdomen dull purple, somewhat darker along the sides. Ovipositor slightly curved beyond the middle, piceous at the tip; cerci slender, hairy. Beneath, dull white. Anterior and middle legs short, femora slender and straight; posterior legs very long and slender, femora and tibiæ each the length of the body omitting the head; all pale, purplish-yellow; femora smooth; tibia with spines irregularly placed on the angles, also on the rounded portion, black at the tips. The spine above the anterior coxa pale, slender, and bent abruptly downward.

Length 1.13 in.; pronotum .26 in.; posterior femur .93 in.; ovipositor .75.

Hab. Southern Colorado, on elevated grassy terraces near the mountains; and the parks. Collected by C. Thomas while accompanying Dr. Hayden's Geological Expedition to Colorado and New Mexico.

It is named in honor of Mr. James Stevenson, a member of the expedition, who has for years accompanied Dr. Hayden in his western explorations, and has been a diligent collector of specimens in all departments of Natural History.

A. MINUTUS, n. sp.

Male. Similar in coloring and appearance to the *A. Stevensonii*. Face mottled with purple; a dark spot below each eye; a narrow yellow line running back from the upper corner of the eye; cranium cinereous, head somewhat covered by the pronotum. Pronotum short, rounded, smooth; transverse incision almost obliterated; oblique dorsal impressions irregular; the dorsal portion cinereous; sides with a triangular black spot, interrupted by light spaces; broadly margined with dull white; lateral angles tipped with piceous-black. Tegmina short, extending over the second abdominal segment; margins pale yellow, central portions brown. Abdomen cinereous, a darker line along the sides; notch of the sub-anal plate very small; appendages small, hairy; the tip of the last dorsal segment strongly bifid, denticulate. The cerci (I use this term for those appendages supplying the place of cerci) slightly bent, bifurcate. Legs same color as abdomen and cranium; anterior pair quite short; middle pair a little longer; the posterior pair very long, the femur marked with a dark line along the upper angle; tibia slender, spines tipped with brown. Antennæ at least twice as long as the body.

Length .75 in.; posterior femur .62 in.; tegmina beyond the pronotum .1 in.

Female similar to the male in appearance, coloring and size. Cerci small, hairy. Ovipositor bent, somewhat narrowed in the middle; brown at the tip.

Length as in the male. Ovipositor .55 in.

Hab. Same as *A. Stevensonii*. Some specimens in each of the species have, on the under side of the posterior femur, about four or five abortive spines, 1870.]

especially the older or more mature ones. This may be important in fixing the position of the genus, which is evidently one of transition.

THAMNOTRIZON, Fischer.

T. PURPURASCENS, Uhler.

Found in the parks of the Rocky Mountains and on the more elevated plains of Colorado and New Mexico. I have removed this from *Anabrus*, the prosternum not being spined.

T. TRILINEATUS, nov. sp.

Female. Small, somewhat like *A. minutus*, Thos., but presenting some marked differences. Head moderate size, immersed in the pronotum nearly to the eyes; occiput very short, convex; vertex rounded between the antennæ, slightly advanced in front, this advanced portion triangular and deflexed; face short, broad, smooth, somewhat convex; labrum large, round. Palpi rather longer than usual, slender, cylindrical; terminal joint of the maxillary palpi the longest. Pronotum small, rounded, not carinated; advanced in front over the back of the head, margin round, or sub-truncate; posterior extremity extended over the base of the abdomen, round; sides narrowed below, reach only about the lower border of the eyes; posterior margin of the sides sloped quite obliquely, slightly sinuate. Antennæ reach the tip of the ovipositor. Ovipositor about the length of the body, slightly bent; cerci short, stout, covered with minute depressed hairs; the plate between them triangular. Prosternum not spined. Anterior tibiæ with two spines in front; medial with two rows on the outside 4 (counting the one at the base) and 2. (Posterior legs wanting in the only specimen obtained.)

Color. (Siccus) testaceous green striped and varied with pale yellow. Face testaceous, palest below, with a brown spot at each lower corner. Three pale, tolerably broad, yellow stripes reach from the head to the end of the abdomen; one along the back and one along each side. Two oblique black marks on the back of the pronotum about the middle; lower margins of the sides yellow; beneath pale. Ovipositor fuscus. Antennæ fuscus. Legs purplish, tarsi piecous.

Dimensions. Length .75 in.; to the end of the pronotum .34 in.; ovipositor .73 inch.

Hab. S. E. Colorado.

EPHIPPITYTHA, Serv.

This is given by Serville only as a subgenus of *Phaneroptera*, but the characters which distinguish it from the rest of the Phaneropteres certainly justify me in raising it to a genus. Prothorax selliform, more or less scooped transversely, elevated posteriorly. Front tuberculate.

E. GRACILIPES, nov. sp.

Male. Small, slender, legs very long and delicate. Occiput short, convex, terminating in a triangular tubercle at the vertex, not raised above the first joint of the antennæ, nor passing between them; face vertical, straight, flat, terminating upward just above the central ocellus in a sharp angle; ocellus situated exactly between the lower borders of the folds around the base of the antennæ. Pronotum selliform, sub-cylindrical in front, widened and elevated posteriorly; a slight transverse indenture each side a little behind the middle; not carinated, surface smooth, with a very soft velvety appearance. Elytra very narrow and straight, passing the abdomen one-third their length; wings narrow, longer than the elytra. Abdomen sub-cylindrical; sub-anal plate notched and bi-spinose; cerci stout, hairy, curved and mucronate; upper plate semicircular. Prosternum not spined; meso- and metasternum have the posterior angles obliquely raised, obtuse.

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Color (siccus) pale yellow. A roseate stripe on the frontal tubercle; second joint of the antennæ orange yellow; a bright yellow curved line runs from the upper canthus of each eye to the pronotum; there they meet with broader lines on the pronotum, which, converging posteriorly, fade near the middle of the dorsum. Anterior portion of the pronotum dotted with red. Stridulating organs very small, roseate. Elytra and wings pellucid. Abdomen minutely dotted with reddish-brown. Tips of the cerci black.

Dimensions. Length .75 in.; to tip of the wings 1.25 in.; wings pass the elytra (about) .25 in.; femur 1 in.; tibia .95 in.

Hab. Southern Colorado. Unique specimen.

ORCHELIMUM, Serv.

O. VULGARE, Harr.

The specimens I have marked as belonging to this species may prove to be new, as they vary considerably from the type.

O. GRACILE, Harr.

Hab. Found in Colorado.

UDEOPSYLLA, Scudd.

U. ROBUSTA, Hald.

I have marked my specimens by guess, as I have no description of this species at hand; but think from allusions to it in the descriptions of other species, that my specimens belong there. Found in the parks.

CENTHOPHILUS, Scudd.

C. DIVERGENS, Scudd.

My specimens vary in having the hind femora of the females spined, spines very short. Yet I am inclined to believe they belong to this species.

ACRIDIDÆ.

(*Truxalides*.)

OPOMOLA, Serv.

O. NEO-MEXICANA, nov. sp.

Female. Long, slender, truxaloid. Head conical; occiput convex, ascending to the somewhat elevated vertex; vertex convex, ascending, sub-margined, rotund, rather elongate before the eyes; face very oblique; frontal ridge distinct, sides parallel, slightly sulcate; lateral carinæ distinct, obtuse, divergent, reaching the lower corners of the face. Antennæ strongly ensiform, triquetrous, reaching to the tip of the pronotum; situated in deep foveolæ under the front of the cone. Pronotum about as long as the head; sides parallel; all its parts very regular; tricarinate, carinæ not elevated but distinct, all about equal; obtusely rounded anteriorly and posteriorly. Elytra a little shorter than the abdomen; wings a little shorter than the elytra. Posterior femora reach the extremity of the abdomen; very slender. Prosternal point short and obtuse, scarcely more than a pointed tubercle.

Color (immediately after being taken out of alcohol, in which it had been immersed for some months). Face yellow, dotted with red; lateral carinæ rosaceous; on the top of the head a faint roseate stripe runs from the end of the cone to the pronotum, bordered each side by a yellow stripe; from the lower part of each eye starts a bright red stripe which, running back across the head, continues along the upper portion of the side of the pronotum to its extremity and is lost on the elytra. Median carina of the pronotum red, the dorsal spaces yellow; lower portions of the sides yellow. Elytra semi-transparent; base and stripe along the dorsal margin roseate. Wings trans-

parent, veins ochreous. Abdomen dirty yellow, reddish on the basal segments. Legs rufous; posterior femora have a pale stripe along the upper edge; spines of the posterior tibiæ tipped with black.

Dimensions. Female. Length 1.62 in.; to tip of elytra 1.50 in.; to extremity of pronotum .52 in.; femur .88 in.; tibia .86 in.

Hab. N. E. New Mexico.

I have not seen the male. This species comes near *O. mexicana*, Sauss, but differs from it in the following respects: The antennæ are not rotundate, but sharply triquetrous; the pronotum is carinate, although the carinæ are but raised lines; and although the posterior lobe is minutely punctured, the pronotum cannot be truly called densely punctate. This species approaches closely to *Truxalis*.

(*Mueronate.*)

ACRIDIDIUM, Geof.

A. FLAVO-FASCIATUM, De Geer.

But one specimen obtained, near the line between Colorado and New Mexico.

CALOPTENUS, Serv.

C. SPRETUS, Uhler.

C. BIVITTATUS, Say.

I have other *Calopteni* which approach very near these species, yet appear to be distinct, but I will not attempt to name them until I have an opportunity of further comparison.

PEZOTETTIX, Burm.

P. BOREALIS, Scudd.

In the cañons and parks of the mountains.

P. PICTA, nov. sp.

Medium size, body elongate, stout, sub-cylindrical. Occiput convex; vertex sloped, flat and narrow between the eyes, suddenly widening in front, this part transverse and triangular; the frontal ridge somewhat convex, with a very slight depression at the central ocellus; eyes large, prominent, oval; antennæ filiform, nearly as long as head and thorax. Sides of the pronotum parallel in the male, and very slightly divergent posteriorly in the female; carinæ obliterated by the sub-cylindrical form; posterior margins of the sides obliquely sloped but not sinuous; posterior angle rounded; a slight transverse incision each side close to the front margin; the three usual transverse incisions distinct, crossing the dorsum in the female, the posterior one only crossing in the male; anterior margin and posterior lobe densely punctate, remainder smoother, sparsely punctate. Elytra very small, oblong-ovate, reaching tip of the second segment; not meeting on the back; nerves reticulate prominent. Wings minute. Posterior femora stout, short, not reaching the extremity of the abdomen. Subanal plate of the male recurved, with a kind of tubercle on the convex surface; upper plate falcate; cerci small. Prosternal spine stout, conical.

Color (siccus). Alternating rings of dark purple and white. The dark stripes are placed as follows: Down the frontal ridge; on the occiput; down each cheek; two interrupted broad stripes running obliquely upward and backward from the anterior margin and angle of the pronotum; four spots on the base of each dorsal, and two on each ventral segment of the abdomen; posterior femora crossed by three broad bands. The nerves of the elytra white, the spaces black. Colors of the male and female the same.

Dimensions. Female. Length 1.30 in.; femur .6 in.; pronotum .28 in. Male. Length .95 to 1. in.; femur .5 in.; pronotum .26 in.

Hab. Eastern Colorado, on the plains and foothills at the base of the mountains.

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When alive this is a very pretty insect, stripes of red, black and white alternating; when immersed in alcohol the red fades, and the black becomes paler.

(*Mutici*.)

BRACHYPEPLUS, Charp.

As Charpentier, at the time he established this genus, failed to give its characters, and the description of Girard is so short and deficient, I give, from a large number of specimens, what I conceive to be the distinguishing characters.

Gen. Char. Body very robust, acridoid. Occiput broad, convex, smooth; vertex margined; frontal ridge broad, short, slightly sulcate, expanding below; lateral carinæ distinct, with a sulcus behind each; antennal foveolæ deep, oblong; cheeks prominent. Pronotum large, elongate, tricarinate; carinæ distinct, continuous; widest below, expanding posteriorly, sides straight, chagrined above, sides glabrous; no transverse incisions on the dorsum; anterior margin rounded, extending slightly on the head; posterior margin round. Elytra and wings rudimentary (in the known species). Legs very robust; posterior femora long as the abdomen, swollen; tibiæ strongly spined nearly the entire length. Antennæ filiform, joints distinct; long as head and thorax. Sub-anal plate of the male tumid; cerci very short; female appendages stout, broad.

A well marked and distinct genus.

B. MAGNUS, Girard.

This ponderous species is easily recognized by fig. 1, pl. xv, Marcy's Expl. Red River La., but the description is quite deficient; therefore, to aid future investigations, I give it more minutely.

(*Siccus*). Yellow, spotted with brown. Occiput very slightly scabrous; with fine shallow punctures; elevated margins of the vertex meet in about a right angle at the front; frontal ridge, although narrow above and gradually expanding as it descends, is not narrowed opposite the antennæ, margins distinct obtuse; sulcus shallow, expanding and fading below, punctured. Pronotum with three distinct, continuous, piceous carinæ; dorsum strongly chagrined, yellowish, with æneous lustre; sometimes, especially in the females, there is a yellow line along each margin of the dorsum; sides purplish at the upper angles, yellowish below. Elytra ovate, reaching the third abdominal segment; nerves longitudinal, slightly branching near the extremity; light brown spotted with black. Wings very small, yellow. Abdomen carinated above; each segment with a brown spot each side, and margin marked with a row of white dots.

Legs as described by Girard.

Dimensions. Length (female) 2 in.; pronotum .55 in.; elytra .3 in.; femur 1.25 in. Males about one fourth less; size varies considerably.

Hab. First observed near Arkansas River (going south) in the vicinity of Canon City. From thence southward to Santa Fe, N. M.

ÆDIPODA, Latr.

Æ. CORALLIPES, Hald.

Dimensions. Female. Length 1.80 in.; femur .90 in.; tibia .75 in.; to tip of elytra 2 in. Male about two-thirds as large as the female.

Hab. Found at Cheyenne; along the Divide, and south of Raton Mountains. The bright vermilion tint of the posterior legs fades in alcohol. I am inclined to believe the *Æ. pardalina*, Sauss, is synonymous with this species.

Æ. CAROLINA, Linn.

Found occasionally throughout our route.

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Æ. æQUALIS, Say.

Colorado. Appears to be replaced further south by *Æ. pruinosa*, Thos., a very closely allied species.

Æ. PRUINOSA, nov. sp.

About the size and somewhat similar in coloring and appearance to *Æ. æqualis*, Say, but broader across the meso- and meta-thorax. Head oblong, seen from the front or side; occiput convex, ascending; vertex strongly declined, broad, flat, not foveolate, very slightly margined, slightly contracted between the eyes; frontal ridge prominent and rounded anteriorly above, somewhat sulcate below, expanding at the ocellus, and slightly contracted immediately below it, divergent and fading near the clypeus; lateral carinæ distinct, sinuous and divergent below (in the males these carinæ are more distinct and extended than in the females). Pronotum short, sub-cylindrical and somewhat coarctate in front, expanded and more angulate posteriorly; cross incisions 1 and 3 apparent, 2 very indistinct in the male, apparent on the sides in the females, 1 arcuate above, 3 slightly sinuous and situated about the middle of the pronotum; central carinæ merely a raised line; the lateral carinæ obliterated in front, obtuse on the posterior lobe; truncate in front, posterior angle obtuse. Elytra and wings considerably longer than the abdomen. Posterior femora broad, not reaching the extremity of the abdomen. Antennæ stout, reaching the middle of the abdomen in the males, a little shorter in the females, joints distinct.

Male. Color (siccus). Ash-colored varied with brown. Head pruinose, except the vertex, which is mouse-colored. Pronotum lilac on the back, sides pruinose. Elytra crossed by three broad fuscus bands, middle one the broadest and darkest; apex transparent. Wings transparent yellow at the base; crossed by a dusky band as in *Æ. æqualis*; apex pellucid. Posterior femora pruinose at the base, crossed by an oblique brown band beyond the middle; tip brown; basal half of the inside black; tibiæ orange yellow; tarsi pale. Venter pale yellow. Antennæ fuscus.

Female differs as follows: Seldom pruinose; occiput brown; pronotum reddish-brown, varied with dots and lines of yellow. The front part of the pronotum more regular and smooth; the posterior lobe of each is densely punctured, but that of the female is intersected by irregular, slightly raised lines. The dark lines across the elytra narrower, paler and more irregular.

Dimensions. Male. Length 1.10 in.; to tip of elytra 1.42 in.; pronotum .26 in.; femur .60 in.; tibia .58 in. *Female.* Length 1.48 in.; to tip of elytra 1.70 in.; pronotum .34 in.; femur .76 in.; tibiæ .70 in.

Hab. Quite abundant in Southern Colorado and Northern New Mexico.

Æ. CINETA, nov. sp.

Female. Very similar in appearance and coloring to *Æ. æqualis*, but in the carvings of the head approaching the *Tomonoti* (Sauss) of which *Æ. sulphurea*, Burm., may be taken as the type. Vertex channeled; the margins strongly and sharply elevated, waved, descending; truncate squarely in front; a slight median line visible. Frontal ridge vertical, straight, sulcate, narrowed immediately below the antennæ, expanding at the base, reaching the transverse suture; lateral carinæ distinct, divergent. Pronotum rugose, tricarinate, truncate in front, angled at the tip; median carina only a raised line, cut by incisions, 1 and 3; lateral carinæ distinct on the posterior lobe, obliterated in front; coarctate in front, expanding posteriorly; incision 3 (posterior) situated before the middle. Elytra narrow, passing the abdomen one-third their length; wings nearly as long. Posterior femora not passing the abdomen. Antennæ reaching beyond the pronotum slightly.

Color (siccus). Rusty-brown varied with lighter and darker shades. Face and the sides of the pronotum yellow mottled with brown; two black bands pass round the front, one immediately above and the other just below the

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antennæ, (the lower a little broader than the upper) converging behind these they pass through the eye (plainly to be seen in fresh specimen) and become a single black stripe behind the eye which reaches to the posterior incision of the pronotum, decreasing in width as it passes along the lateral angle. Pronotum ash-colored on the dorsum, posterior lobe palest, with minute brown tubercles scattered over it, a dark brown spot on each side. Elytra brown, darkest next the base, semi-transparent at the apex. Wings transparent yellow next the base; apical half dusky; this dark marginal band is broad in front, but tapering toward the inner angle but does not reach it; reaches along the front submargin nearly to the base; is somewhat darkest at the inner and outer borders, reaching to the apex. Posterior femur reddish with two oblique darker bands on the outer face, and three black bands inside.

Dimensions. Length 1 in.; to tip of elytra 1.26 in.; to the end of pronotum (from the front of the head) .31 in.; femur .54 in.; tibia .44 in.

Hab. New Mexico.

C. CARLINIANA, nov. sp.

Female. This species at first sight has much the appearance of *C. Carolina*, but an examination of the head or thorax, or spreading the wings will soon deceive the observer. Although smaller than that species it is more robust, compared with its length. Head carved much the same as *C. corallipes*. Occiput short, sub-convex, not ascending; vertex very broad, slightly deflexed; the broad shallow central foveola divided by a median carina into two elongate pentagonal spaces, the median carina and margin next the eye being the longest sides; the lateral shallow foveolæ triangular; at the top of the frontal ridge is a lunate depression; frontal ridge somewhat broad, obtusely margined, expanded at the ocellus, vertical, reaching the cross suture; lateral carinæ distinct, reaching the corners of the face. Antennæ filiform, sub-planate. Pronotum sub-cylindrical in front, flat on the lateral lobe, expanded posteriorly, not constricted; median carina a raised line, cut by the cross incisions 1 and 3; posterior incision before the middle; lateral carinæ obliterated in front, distinct on the front of the posterior lobe: posterior lobe densely punctate. Elytra and wings extend slightly beyond the abdomen. Posterior femora short, not reaching the extremity of the abdomen; inflated.

Color (siccus). Ash-colored. Vertex and posterior lobe of the pronotum tinged with reddish-brown. Elytra opaque and somewhat brownish at the base, semi-transparent at the apex; dotted with pale brown. Wings when fully expanded present a very broad fuscous band across the base parallel with the body, the outer border reaching beyond the middle; a large triangular space at the apex transparent, with dark and white veins. Posterior femora spotted with black inside; tibiæ yellow.

Male. The male differs only in size, and in having the elytra crossed by irregular brownish bands, somewhat as in *C. æqualis*.

Dimensions. *Female.* Length 1.38 in.; to tip of elytra 1.58 in.; to tip of the pronotum (measuring from the vertex) .45 in.; femur .64 in. *Male.* Length 1.16 in.; to tip of elytra 1.36 in.; to tip of pronotum .42 in.; femur .58 inch.

Hab. Eastern Colorado.

Named in honor of Col. Carlin, for the assistance rendered the expedition by him.

C. NEGLECTA, nov. sp.

Female. Much like *C. corallipes*, about the size of the male of that species, for which it has doubtless often been taken. In its carvings, as well as size, it comes very near *C. Mexicana*, Sauss. Vertex very broad, transverse, foveolate; the large central foveola divided, by the recurving margins, into three contiguous foveolæ, these margins, seen from the front, form a W, with a line

across the middle angle; lateral foveolæ obsolete; frontal ridge bisulcate above the ocellus, sulcate below, expanded at the ocellus. Pronotum flat above, rough; median carina an elevated line, very distinctly severed by cross incision 3, before the middle; incisions 2 and 3 come together at the carina; anterior portion rugose; posterior lobe covered with elongate tubercles, its sides granulose. Wings and elytra extend beyond the abdomen. Posterior femur about the length of the abdomen. Antennæ filiform, reaching the tip of the pronotum.

Color (siccus). Dirty-brown, with fuscus spots. Each elytrum has a narrow yellow stripe near the dorsal border; the base brown, fading toward the apex, which is semi-transparent; marked with groups of fuscus spots which at two points form irregular bands somewhat as in *E. æqualis*. Wings yellow at base; a dark band of moderate width crossing just beyond the middle, curving inward to the posterior angle; apex transparent, veins dusky. Posterior femora crossed on the outside by two very indistinct oblique reddish bands; inside, beneath and tibiæ orange yellow (probably bright red in the fresh specimens); spines of the tibiæ tipped with black. Antennæ pale at base, apical portion dusky.

Dimensions. Female. Length 1.16 in.; to tip of elytra 1.38 in.; to end of pronotum .44 in.; femur .63 in.

Hab. N. Mexico.

This species agrees so nearly with *E. Mexicana*, of Saussure, that I would have marked my unique specimen as such, but for the fact that its wings are yellow at the base.

TOMONOTUS, Sauss.

T. NIETANUS, Sauss.

T. MEXICANUS, Sauss.

I have labelled my specimens with some hesitancy, especially those belonging to the first species. *T. nietanus*, when living appears black, and may easily be recognized when flying by its black body and bright red wings. It is closely allied to *E. sulphurea*, Burm., which belongs to this genus.

T. PSEUDO-NIETANUS, nov. sp.

Male. Size and appearance much like *T. nietanus*, Sauss., from which it differs only as follows: The facial costa is slightly broader and less excavated below the ocellus; the occiput and pronotum less rugose; the antennæ nearer cylindrical. The color is darker, the sides being deep black throughout to the tips of the elytra; the posterior part of the occiput and dorsum of the pronotum an ashy-yellow, the front lobe and lateral margins of the pronotum dotted with black; the upper edge of the posterior femur has two yellow spots, one next the base the larger. Beneath shining black. Wings as in *nietanus*; base rosaceous, posterior border broadly margined with black, and a fascia of the same running along the anterior margin nearly to the base.

Dimensions. Male. Length 1 in.; to tip of elytra 1.25 in.; femur .67 in.; tibia .53 in.

Hab. Found near Cañon City, Colorado, in a mountain cañon.

I have not seen the female. It may possibly be a variety of *T. nietanus*, but its variations from that species added to the fact that it was found at but one point, justify me in describing it as new.

STAURONOTUS, Fischer.

S. ELLIOTTI, nov. sp.

Medium size, robust, sub-angulate. Head large, widest below; face sub-vertical, strongly deflexed below the transverse suture; occiput convex; vertex slightly declined, foveolate; foveolæ shallow, the central broad, lateral triangular, the points of the three meeting in a sharp angle midway between the upper angle of the eye and the antennæ; frontal ridge not sulcate, nar.

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rowest above; lateral carinæ distinct, strongly divergent below; eyes medium size, ovate. Pronotum short, sub-truncate in front, posterior angle obtuse and rounded; the three transverse incisions distinct and closely approximate, anterior shortest, 2 and 3 connect at their termini on the side of the pronotum by an oblique depression; incision 3 about the middle; median carina distinct, not elevated; lateral carinæ distinct on the anterior lobe and front part of the posterior lobe; the spaces on the anterior lobe between the median and lateral carinæ depressed, basin-like. Elytra and wings about as long as the abdomen. Posterior femora inflated at the base, attenuate near the tip. Pectus not broader than the head. Antennæ filiform, reaching the end of the pronotum.

Color (siccus). Yellow varied with brown. Head yellow, occiput dotted with brown, forming imperfect waved lines; antennæ pale at base, remainder brown. Pronotum with a yellow cross on the back, beginning at the lateral angles of the posterior lobe, converging anteriorly they cross about the middle and fade on the anterior lobe; a triangular brown spot on the posterior lobe; sides brownish fading below. Elytra brown, a yellow stripe along the inner margin; lower half dotted with dark brown. Wings transparent, the veins white except at the apex where they are dusky. Posterior femora yellow with two or three oblique brownish spots near the upper edge, which cross and become distinct bands on the inside; knee brown; tibiæ dusky above, and at the tips, rest yellow (probably bluish in fresh specimens.)

Dimensions. Female. Length 1.67 in.; to tip of elytra 1.10 in.; to end of pronotum .34 in.; femur .62 in. *Male.* Length .88 in.; to tip of elytra same; femur .60 in.

Hab. Eastern Colorado.

Named in honor of Mr. Henry Elliot, artist of the expedition, who, in addition to his arduous duties, was constant in his efforts to collect specimens of Nat. Hist., and who rendered me valuable assistance in collecting plants and insects.

BOOPEDON, Thos., nov. gen.

Gen. Char. Body somewhat like *Pezotettix*, Burm. Head large, exceeding the thorax in width, widest below; seen from the side presents a somewhat semi-circular front; occiput convex; vertex sloping, broad, sometimes exhibiting a shallow foveola, usually rhomboidal, with a slight median carina; frontal ridge prominent, not sulcate, margins obtuse and nearly parallel. Antennæ nearly as long as head and thorax, inserted in deep oblong foveolæ. Pronotum of medium length, sides parallel; sub-truncate in front; posterior angle obtuse; three transverse incisions; posterior about the middle, cutting the median carina; median carina distinct, not elevated; lateral carinæ obsolete. Elytra shorter than the abdomen in the female, about the length of the abdomen in the male; inflated near the base, narrowed at the apex; two longitudinal veins dividing it into three nearly equal fields. Posterior femora stout, narrowed at the tip, passing the abdomen; tibiæ spined, enlarged at the tip. Ultimate joint of the maxillary palpi enlarged at the end, truncate. Prosternum with the anterior half tumid; latter half divided by a longitudinal sulcus. Pectus sub-convex or flat. Anal appendages of the female short and obtuse; sub-anal plate of the male keeled, trigonal and turned up.

B. NIGRUM, nov. sp.

Black, medium size, female much larger than the male.

Female. Occiput smooth, a few punctures on the vertex, a faint median line visible; eyes about midway between the front and back margins; frontal ridge convex, with a very slight indentation at the ocellus, punctured on the margin, reaching nearly to the cross suture, where it suddenly expands; lateral carinæ distinct, obtuse, sinuate and divergent; a deep sulcus below each eye. Pronotum nearly as broad as the head; median carina distinct, straight; pos-

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terior lobe punctate; central portions of the sides levigate; cross incisions 1 and 2 not reaching the median carina. Elytra narrow, covering about two-thirds of the abdomen, lanceolate; the two longitudinal veins strong, approaching at the apex, along the borders, the reticulate veins coarse. Wings shorter than the elytra.

Color (siccus). Dark ferruginous. Lower angles of the face and sides of the lip black. Tips of the elytra black. Apex of the wings dusky, rest transparent. Two reddish spots inside the posterior femora; tibiæ transparent red.

Male. Similar in coloring only darker. Elytra black, somewhat paler at the base; wings transparent, cloudy at the apex (I think they are roseate when living.)

Dimensions. Female. Length 1.5 in.; pronotum .32 in.; elytra .55 in.; femur .95 in.; tibia .80 in. *Male.* Length .87 in.; pronotum .25 in.; elytra .55 in.; femur .62 in.; tibia .56 in.

Hab. South Colorado and New Mexico, from Cañon City south, near the mountains; mostly in the narrow valleys behind the first range of parallel hills called "Hog-backs."

B. FLAVO-FASCIATUM, NOV. SP.

Very much like *B. nigrum* in size and carving.

Female. Central foveola of vertex very shallow, divided into two parts by a median carina; frontal ridge convex, sparsely punctured. Pronotum differs from previous species only in having the transverse incisions less distinct.

Color (siccus). Yellow varied with brown. Head yellow; lower angles of the face black; a very distinct yellow line, starting from the upper corner of each eye, reaches the posterior margin of the pronotum, bowing inward near the middle; bordered on each side by an irregular dark brown line; a dark line borders each eye posteriorly. Median carina of the pronotum dark brown or piceous-black; the transverse incision black; rest of the pronotum brownish, palest on the sides. Elytra formed as in *B. nigrum*, brown, a pale yellow stripe near the upper and lower margins of each, the upper divided near the base; three oblong yellow spots in a line along the middle, and a few smaller spots near the apex; reach the third abdominal segment. Wings transparent, dusky at the tips. A brown stripe along each side of the abdomen, near the dorsum; a yellow spot in it on each segment near the upper border. Venter yellow.

Male. Unknown.

Dimensions. Female. Length 1.5 in.; pronotum .38 in.; elytra .50 in.; femur .85 in.; tibia .76 in.

Hab. Same as preceding, but a much rarer species.

Remarks on Huxley's Classification of Birds.

BY T. HALE STREETS.

In arranging and classifying the collection of birds' skeletons, crania, and sterna in the possession of the Academy, I was induced to compare some points in their osteology with the statements made by Prof. Huxley in an article entitled "On the Classification of Birds," which appeared in the Proceedings of the Zoological Society of London, 1867, Part II.

In this article Prof. Huxley divides birds principally according to the modifications presented by the bones forming the roof of the mouth, namely, the palatines, the maxillo-palatine processes, the pterygoids, the basi-ptyergoid processes, and the vomer.

After these the sternum, clavicles, coracoids, and occasionally other points claim attention as affording a basis for the classification.

He makes three orders. The first contains a single bird, the extinct Archæ-

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